

Efek Wall-Frame Ratio pada Respon Inelastik Struktur Beton Bertingkat Banyak termasuk Rotasi Fondasi

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Abstrak

The combination between frames and walls is frequently used in the earthquake resistant design of multistorey reinforced concrete buildings. Frames are relatively flexible, it will deform according to the shear mode. Meanwhile walls are usually very stiff and it will deform with the flexural one. Accordingly between frames and walls will have a conflict of deformation modes. There is no clear guidance regarding the appropriate ratio between the number of walls and frames. In addition, effects of the rocking foundation to the structural response need to be investigated. The seismic behavior of the multistorey reinforced concrete building has been investigated. Three types of structure i.e. 2 Walls + 5 Frames or 2W+5F, 2W+7F and 2W+9F have been used for the structural models. The corresponding structural models are 12-storey buildings with 2 symmetrical beams span and _symmetrical buildings plan. The North-South Component of the 1940 El Centro earthquake record has been used for the input motion. The stiffness and damping interaction between the soil and the foundation according to the Lumped Parameter Method are also used. The results of investigation show that the smaller the wall-frame ratio, the bigger the base shear coefficient resisted by walls, the smaller the plastic hinge rotation of the column's bases, the smaller the total plastic hinge rotation and the hysteretic energy dissipation of every frame. In general, the structural response of the rocking structures are smaller than those the _fixed base structures. The appropriate wall frame-ratio can not be defined definitely without any clear requirement of the design criteria.